

WHAT IS CLAIMED IS:

1. A medical device for supporting a structure comprising:
a screw assembly, the screw assembly including
a base,
an arm, and
an interconnection means for coupling the base to the arm, the interconnection means allowing the arm to be positionable in a first position that is parallel to a long axis of the base and positionable in a second position that is perpendicular to the long axis of the base,
the base configured for attachment to a structure in a patient and the arm configured for attachment to a support structure.
2. The medical device of claim 1, wherein the structure in a patient is bone.
3. The medical device of claim 1, further comprising a support structure and wherein the screw assembly is attached to the support structure by the arm.
4. The medical device of claim 3, further comprising two screw assemblies wherein the two screw assemblies are attached to the support structure.
5. The medical device of claim 1, wherein the screw assembly is comprised of a material selected from the group consisting of titanium, stainless steel, carbon fiber, shape memory metal, a biocompatible material, a reabsorbable material, and combinations and composites thereof.
6. The medical device of claim 1, wherein the screw assembly is comprised of titanium.
7. The medical device of claim 1, wherein the screw assembly is comprised of a continuous piece of shape memory metal.
8. The medical device of claim 1, wherein the interconnection means is comprised of shape memory metal.
9. The medical device of claim 1, wherein the screw assembly is comprised of a continuous piece of material suited for bending; and
wherein the interconnection means for coupling the base to the arm is positioned by bending.

10. The medical device of claim 1, wherein the screw assembly has an overall length in the range substantially between 0.1 and 100 centimeters.

11. The medical device of claim 1, wherein the screw assembly has an overall length in the range substantially between 50 and 600 millimeters.

12. The medical device of claim 1, wherein the screw assembly has an overall length sized for subcutaneous support of the posterior of a spine.

13. The medical device of claim 1, wherein the arm is comprised of a body, a base yoke and a connector end.

14. The medical device of claim 13, wherein the body of the arm is rod shaped.

15. The medical device of claim 1, wherein the base is comprised of a base head and an anchor.

16. The medical device of claim 15, wherein the anchor is selected from the group consisting of a screw, staple, hook and a nail.

17. The medical device of claim 16, wherein the anchor is a screw configured for bone anchoring.

18. The medical device of claim 17, wherein the anchor is a screw configured for insertion into the pedicle of a vertebrae.

19. The medical device of claim 1, wherein the interconnection means includes a press-fit cross pin.

20. The medical device of claim 1, wherein the interconnection means is comprised of an open saddle head and coupling-cross piece.

21. The medical device of either claim 19 or 20, wherein the interconnection means is comprised of a setscrew;

wherein the setscrew maintains the arm and the base together as a single unit; and
wherein the setscrew can be tightened within the interconnection means to effect locking of the arm in a position that is substantially perpendicular to the long axis of the base.

22. The medical device of claim 19 or 20, wherein the interconnection means is comprised of a cam;

wherein the cam maintains the arm and the base together as a single unit; and

wherein the cam can be turned within the interconnection means to effect locking of the arm in a position that is substantially perpendicular to the long axis of the base.

23. The medical device of claim 1, further comprising:

a support structure including

an anchor,

a receiver, and

a locking means;

wherein the anchor is configured for attachment to a structure in a patient;

wherein the receiver includes

a receiver having an opening for attachment to the arm of the screw assembly; and wherein the locking means is configured to lock the arm to the support structure, after the support structure has been deployed in a patient.

24. A medical device support structure comprising:

two receivers;

wherein each receiver includes

an open-ended receiver configured for attachment to a medical device and

a locking means, the support structure configured to receive the medical devices and lock the medical devices to the support structure using the locking means, after the support structure has been installed in a patient.

25. The medical device support structure of claim 24, wherein the open-ended receiver is configured as a saddle-type receiver.

26. The medical device support structure of claim 24, wherein the locking means is selected from the group consisting of a setscrew and a cam.

27. The medical device support structure of claim 24, wherein the locking means are oriented within a plane of a top surface of the medical device support structure for access from the top surface.

28. The medical device support structure of claim 24, wherein the support structure is comprised of a material selected from the group consisting of titanium, stainless steel, carbon fiber, a biocompatible material, a reabsorbable material and combinations and composites thereof.

29. The medical device support structure of claim 24, wherein the medical device support structure is comprised of titanium.

30. The medical device support structure of claim 24, wherein the medical device support structure includes a central hinged claw having a threaded hinge-engagement member and nut disposed on a top surface of the medical device support structure;

wherein tightening the nut onto the threaded hinge-engagement member causes a pivoting about the hinge to effect closing of the claw.

31. The medical device support structure of claim 24, further comprising: two screw assemblies;

wherein each screw assembly includes

a base,

an arm, and

an interconnection means for coupling the base to the arm, the interconnection means allowing the arm to be positionable in a first position that is parallel to a long axis of the base and positionable in a second position that is perpendicular to the long axis of the base, the base configured for attachment to a structure in a patient and the arm configured for attachment to the support structure.

32. The medical device support structure of claim 31, wherein the structure in a patient is bone.

33. The medical device support structure of claim 31, wherein the support structure further comprises

an anchor and

a locking means for the anchor;

wherein the anchor is configured for attachment to a structure in a patient.

34. The medical device support structure of claim 33 wherein the structure in a patient is bone.

35. The medical device support structure of claim 33 wherein the locking means is selected from the group consisting of a setscrew and a cam.

36. The medical device support structure of claim 33 wherein the anchor is selected from the group consisting of a screw, staple, hook and a nail.

37. A method of supporting the spine, the method comprising the steps of:

- 1) delivering to bone, two screw assemblies having arms, bases and interconnection means;
- 2) delivering to the vicinity of bone, a support structure having two receivers having locking means for the arms of the screw assemblies;
- 3) deploying the arms of the screw assemblies; and
- 4) engaging the locking means of the receivers to secure the arms of the screw assemblies to the support structure.

38. A method of supporting the spine, the method comprising the steps of:

- 1) delivering to bone, two screw assemblies having arms, bases and interconnection means;
- 2) delivering to bone, a support structure having a central aperture with a locking means and an anchor, and two receivers having locking means for the arms of the screw assemblies;
- 3) deploying the arms of the screw assemblies; and
- 4) engaging the locking means of the receivers to secure the arms of the screw assemblies to the support structure.

39. A method of supporting the spine, the method comprising the steps of:

- 1) delivering to bone, a screw assembly having an arm, base and interconnection means;
- 2) delivering to bone, a support structure having a central aperture with a locking means and an anchor, and a receiver having locking means for the arm of a screw assembly;
- 3) deploying the arm of the screw assembly; and
- 4) engaging the locking means of the receiver to secure the arm of the screw assembly to the support structure.

40. A medical device support structure comprising:

- an anchor,
- a receiver and
- a locking means;

wherein the anchor is configured for attachment to a structure in a patient;

wherein the receiver includes

a receiver having an opening for attachment to a medical device; and
wherein the locking means is configured to lock the medical device to the support structure, after the support structure has been deployed in a patient.

41. The medical device support structure of claim 40 wherein the structure in a patient is bone.

42. The medical device support structure of claim 40 wherein the locking means is selected from the group consisting of a setscrew and a cam.

43. The medical device support structure of claim 40 wherein the anchor is selected from the group consisting of a screw, staple, hook and nail.

44. The medical device support structure of claim 40, wherein the receiver includes a plurality of receivers.